

**DIGITAL VOLTAGE GAIN AMPLIFIER FOR ZERO IF ARCHITECTURE****ABSTRACT**

The invention is directed toward a digital VGA that is implemented in the logarithmic domain. The digital VGA exploits logarithmic properties to replace a complex multiplier of a conventional digital VGA with a simple and inexpensive adder. Moreover, additional techniques are described to significantly reduce the size of one or more lookup tables (LUTs) implemented within the digital VGA. In this manner, the invention can realize a simple, low cost digital VGA.